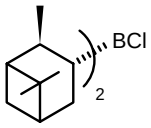
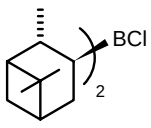


(–)-1

(–)-DIP-Chloride™

DIP-Chloride™

recent advances



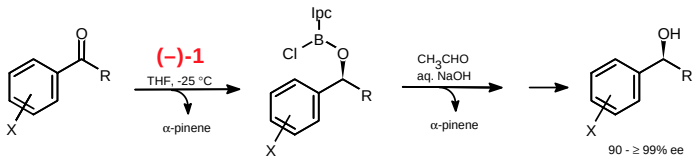
(+)-1

(+)-DIP-Chloride™

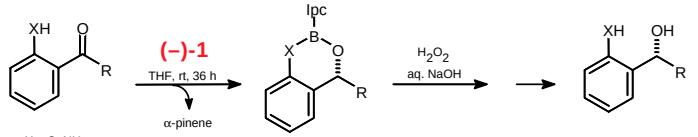
Professor H.C. Brown and co-workers have extensively demonstrated the remarkable utility of DIP-Chloride™ in asymmetric synthesis.[1] Recent applications of this reagent are shown below. Please call us to inquire about bulk quantities of DIP-Chloride™. For a complete list of Aldrich's chiral organoboron reagents, please contact our Technical Services Department to request a free copy of the 1997 *Aldrich Chiral Compounds Brochure.*

31,702-0 (–)-DIP-Chloride™
31,701-2 (+)-DIP-Chloride™

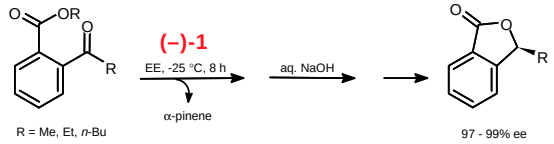
Intermolecular Asymmetric Reductions[1]



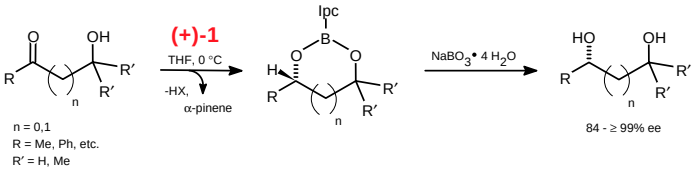
Intramolecular Asymmetric Reductions[2]



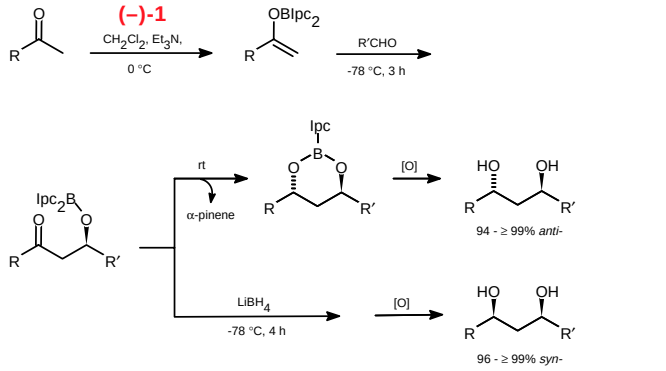
Synthesis of Optically Active 3-Substituted Phthalides[3]



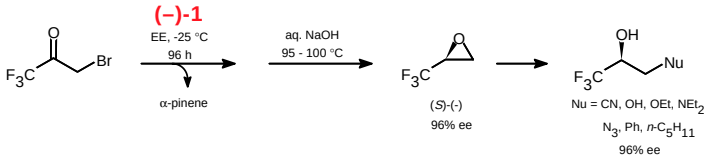
Asymmetric Synthesis of 1,2- and 1,3-Diols[4]



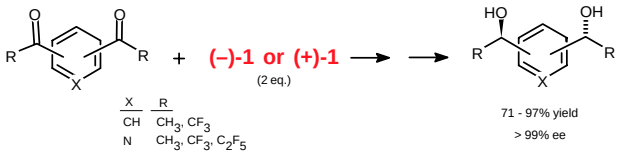
Asymmetric Enolboration-Aldolization-Reduction[5]



Asymmetric Reduction of Fluoroketones[6]



Synthesis of C_2-Symmetric Chiral Auxiliaries[7]



References: (1) For reviews on the chemistry of DIP-Chloride™, see: Brown, H.C.; Ramachandran, P.V. *Acc.Chem.Res.* **1992**, *25*, 16. Idem *Pure Appl. Chem.* **1994**, *66*, 201. Idem *Organometal. Chem.* **1995**, *500*, 1. Brown, H.C.; Ramachandran, P.V. In *Current Topics in the Chemistry of Boron*; Kabalka, G., Ed.; The Royal Society of Chemistry Special Publication No. 143; Royal Society of Chemistry: Cambridge, UK, 1994; pp 125-128. Brown, H.C.; Ramachandran, P.V. In *Advances in Asymmetric Synthesis;* Hassner, A., Ed.; JAI Press: Greenwich, CT, 1994; Vol.1, pp 144-120. Ramachandran, P.V.;Brown, H.C. In *Reductions in Organic Synthesis;* Abdel-Magid, A., Ed.; American Chemical Society: Washington, DC, 1996; Chapter 5. (2) Ramachandran, P.V. et al. *Tetrahedron Lett.* **1994**, *35*, 2141. Shieh, W.-C. et al. *ibid.* **1995**, *36*, 3797. Ramachandran, P.V. et al. *ibid.* **1997**, *38*, 957. (3) Ramachandran, P.V. et al. *Tetrahedron Lett.* **1996**, *37*, 2205. (4) Ramachandran, P.V. et al. *ibid.* **1997**, *38*, 761. (5) Ramachandran, P.V. et al. Paper (ORGN 651) presented at the 213th ACS National Meeting, San Francisco, April 16, 1997. (6) Ramachandran, P.V. et al. *J. Org. Chem.* **1995**, *60*, 41. Ramachandran, P.V.; Brown, H.C In *EPC-Synthesis of Fluoroorganic Compounds: Stereochemical Challenges and Biomedicinal Targets*; Soloshonok, V.A.,Ed. ; Wiley: Chichester, UK, in press. (7) Ramachandran, P.V. et al. *Tetrahedron Lett.* **1996**, *37*, 3795. Ishizaki, M. et al. *Tetrahedron: Asymmetry* **1994**, *5*, 411. Jiang, Q. et al. *Tetrahedron Lett.* **1996**, *37*, 797. Sablong, R.; Osborn, J.A. *ibid.* **1996**, *37*, 4937. Déziel, R. et al. *J. Org. Chem.* **1996**, *61*, 1875.

Notes: (–)-DIP-Chloride™ is ^{d}Ipc$_2$BCl (derived from (+)-α-pinene). (+)-DIP-Chloride™ is ^{l}Ipc$_2$BCl (derived from (–)-α-pinene). DIP-Chloride is a trademark of Sigma-Aldrich Corporation.

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